

1 Specification

2 **IN CAMERA MESSAGING AND ADVERTISEMENT SYSTEM**

3 This is a Continuation-in-Part of Application No. 09/105,594 filed June 26, 1998, a
4 Continuation-in-Part of Application No. 09/187,706 filed November 6, 1998, and a
5 Continuation-in-Part of Application No. 09/211,992 filed December 14, 1998.

6 Background of the Invention

7
8 Field of the Invention

9 The present invention relates generally to digital still and video cameras, and
10 more particularly to a digital camera system wherein personal, camera model related and
11 generic messages are compiled and transmitted by a message center and received by and
12 displayed on a digital camera. This invention is related to the inventions disclosed in
13 U.S. Patent Application Nos. 09/105,594, filed June 26, 1998; 09/187,706 filed
14 November 6, 1998; and 09/211,992, filed December 14, 1998, the disclosures of which
15 are incorporated herein by reference.

16
17 Brief Description of the Prior Art

18 Traditionally, when cameras are sold by a retailer to a customer, it is a one-time
19 transaction. There is normally very little opportunity for the camera vendor, the retailer,
20 or the manufacturer or a digital camera service center, etc. to promote an on-going
21 business relationship with the particular customer. Although cameras are known that can
22 send and receive messages, they do not provide for an on-going business relationship. A

1 camera with message capability is described in U.S. Patent No. 5,220,366 that can
2 receive and display messages and transmit acknowledgment to the sender. In this patent,
3 the goal is to minimize the number of devices a photographer needs to carry with him by
4 integrating a photographer's pager with the camera. The pager in this patent is not
5 configured to be directly relevant to the actual operation of the camera, or for
6 enhancement of communication between a customer and the manufacturer, retailer,
7 service center, etc. Currently, camera warranty records are kept by vendors and can be
8 used to identify purchases for the purpose of sending upgrade information, etc., but
9 statistically a high percentage of purchasers do not fill out and return their warranty
10 registration forms. Furthermore, a manufacturer's method of contacting purchasers from
11 warranty registrations is normally through mailed advertisements, and because of the
12 large quantity of so called junk mail, it is common for such items to be discarded without
13 review.

14 In view of the above, it is apparent that a need exists for a method by which the
15 vendor, manufacturer, retailer, service center, etc. can leverage on the ability of a digital
16 camera to display alphanumeric and graphical messages on a camera display. Although
17 most digital cameras are equipped with the capability of displaying data, it is limited to
18 information and data already programmed into the camera at the time of manufacture,
19 and does not enhance vendor to customer communication.

20

SUMMARY

It is therefore an object of the present invention to provide a system for maintaining communication between a seller of camera related merchandise or services, or a billing center and a camera user.

It is a further object of the present invention to provide a system wherein a manufacturer or retailer can advertise camera upgrades and new models to individuals who have purchased a camera.

It is a still further object of the present invention to provide a system wherein the advertisement can be in visual or audio form.

It is a still further object of the present invention to provide a system wherein a direct content advertisement can be sent to camera users based on their usability habits.

It is a still further object of the present invention to provide a system wherein a personal content advertisement can be sent to camera users based on additional data from the user such as from questionnaires etc.

It is a still further object of the present invention to provide a system wherein a generic advertisement can be sent to camera users based on their usability habits.

It is a still further object of the present invention to enable ongoing advertisement in the form similar to banners on the camera display.

It is a still further object of the present invention to enable an interactive response by the camera user to such messages.

Briefly, a preferred embodiment of the present invention includes a system wherein a message center maintains records of camera purchasers, and each corresponding camera identification (ID). The message center prepares and collects

1 messages, putting them in categories including personal messages for a particular
2 camera/user, groupwise messages for all users of a particular category such as camera
3 model, shooting habits, other interests, etc., and generic messages which can be
4 advertisements for all users with cameras configured according to the system. Each
5 camera is equipped with a transceiver for receiving and sending data, and a visual display
6 for observing the messages. Alternatively, the communication to the user can be
7 achieved by means of an audio signal such as from a speaker built into the camera. When
8 a user turns on the camera, the transceiver transmits a signal conveying the camera
9 identification to the message center. In response, the center packages the messages that
10 are identified for the particular camera/user and transmits them along with a code that
11 assures reception of personal message portions only by the specific camera. In addition,
12 such personal communication may also be encrypted. The camera receives the messages,
13 and places them on a display based on a predefined priority. Interactive messages remain
14 on the display until the user responds through activation of a key or key sequence on a
15 camera keypad. Alternatively, a key or key sequence is provided whereby a user can
16 select to not receive messages, the activation of the key/sequence directing the camera
17 processor to not initiate the signal transmission to the message center upon camera
18 activation.

19 An advantage of the present invention is that it provides a camera vendor or
20 retailer the ability to promote photo related advertisements such as related photographic
21 services, upgrades and new models.

1 A further advantage of the present invention is that it can send a custom message
2 relevant to a single camera user, and/or generic messages to users of cameras with a
3 particular classification or interest category, and/or to all users.

4 A still further advantage of the present invention is that advertisements can be
5 sent to a camera with a greater probability of being received and processed by the camera
6 user than an advertisement sent by other non-direct messaging systems such as mail, to
7 be received most often with numerous other junk mail items.

8 A still further advantage of the present invention is that messaging received by the
9 camera can be interactively responded to by the cameras user, providing an immediate
10 and convenient mechanism to respond to messages.

11 A still further advantage of the present invention is that the system can provide an
12 additional income category for the camera vendors, in the form of direct advertisement.

13 A still further advantage of the present invention is that camera users can stay
14 well informed as to services and improvements related to their camera.

15
16 In the Drawing

17 Fig. 1 is an illustration of the system of the present invention;

18 Fig. 2 shows the LCD display on the back side of the digital camera;

19 Fig. 3A is a flow chart of preparation of user based message packets by the
20 message center;

21 Fig. 3B is a flow chart of preparation of multiple classification message packets
22 by the message center;

23 Fig. 3C illustrates a possible single message structure;

1 Fig. 3D illustrates a packet generated from multiple messages;
2 Fig. 4 shows an example of a generic message;
3 Fig. 5 shows an example of a personal message;
4 Fig. 6A is a flow chart providing further detail of a preferred embodiment of the
5 present invention;
6 Fig. 6B is a flow chart of an alternate embodiment; and
7 Fig. 7 is a detailed block diagram of the digital camera.
8

9 Detailed Description of the Preferred Embodiment

10 Referring now to Fig. 1 of the drawing, a preferred embodiment of the system 10
11 of the present invention is illustrated, including a message center 12, a digital camera 14
12 and various ways of communication between the center 12 and camera 14. The preferred
13 mode of communication is through a radio frequency connection, facilitated in the
14 camera by a transceiver as evidenced by antenna 16. Transmission can be through a
15 cellular telephone type of system, or it can be a dedicated radio frequency network, to a
16 network transceiver 18 making connection through lines 19 and 21 to a communication
17 network which can be either digital 20 or analog 22. Transmission to the message center
18 also occurs if the camera is connected to the network through a cable connection. For
19 example, a direct digital connection is made through connector 24 and cable 26 to the
20 digital network 20. Connection can alternatively be made from the digital connector 24
21 to analog network 22 through cable 28 and modem 30. Instead of the external modem
22 30, the camera can include an internal modem with an analog output 32 for connection to
23 a cable 34 to the analog network 22. A programmable card 36 can also be used,

1 interfacing with the camera through slot 38. The card can receive data from the network
2 through a computer 40 connected to the network by cables 42 or 44.

3 Fig. 2 shows the back 46 of the camera 14 with an LCD display screen 48 for
4 reviewing messages from the center 12. The messages of the present embodiment sent
5 by the message center are generally related but not essential to the camera operation, and
6 are better described as informative advertisements and peripheral camera business.

7 Although the LCD display screen 48 is shown as a preferred embodiment, the
8 spirit of the present invention also includes other apparatus for displaying a message that
9 will be apparent to those skilled in the art. For example, the messages can also be
10 displayed inside a camera view finder 49, or on another separate message screen such as
11 at area 51. The display of a message can occupy either the whole screen, or a portion of
12 it, also referred to as a banner message. For example, in the screen 48 as shown in Fig. 2,
13 a message could be limited to the area occupied by the two lines of text displayed. The
14 area can be a dedicated area for display of messages.

15 Although the visual display is shown as a preferred embodiment, the spirit of the
16 present invention also include other apparatus for conveying messages that will be
17 apparent to those skilled in the art. For example, the message can be played to the used
18 via an audio speaker 45.

19 In operation of the system 10, the message center 12 prepares and collects
20 messages and sorts them into categories including personal messages for a particular
21 camera/user, messages for all users of a particular category, and generic messages for all
22 users of cameras configured according to the system 10. When a user turns on the
23 camera 14, the camera automatically transmits a signal to transceiver 18 for conveying

1 the camera identification to the message center 12. In response, the center 12 transmits
2 back to the camera any messages that are identified/sorted for the particular camera/user.
3 In the case of a generic message or messages to generic categories, such as all users of a
4 specific camera model, the message center may continuously transmit messages without
5 waiting for a camera to identify itself.

6 Messages that are specific to a particular category, or only for a particular
7 camera/user, are sent with an identification code corresponding only to that particular
8 camera. In addition, personal messages to a particular user may be encrypted, or
9 otherwise secured. The camera according to the present invention will only receive and
10 store in memory those messages that include the proper matching message codes. For
11 example, all cameras configured according to the system of the present invention will
12 respond to a code for generic messages. A separate code must be included for model
13 based messages, and each camera has its own distinct code that must be transmitted with
14 those messages intended for only a specific camera.

15 Other categories may include professional photographers, wild life photographers,
16 etc. A single camera may subscribe to more than one category. The subscription process
17 may be initiated by the camera user or by the message center. For example, a user may
18 choose the categories which he is interested in by going through an interactive selection
19 mechanism on the camera via a yes/no list on the LCD or as played on the camera's
20 audio system. In a different scenario, the user may subscribe to such categories by filling
21 a questionnaire at the time of purchase or when filling in a warranty card. In a different
22 scenario, an intelligent advertisement center may build a user profile based on other

1 information such as the quantity of images taken by a camera, the type of images etc., in
2 order to determine a possible class of interest.

3 An alternative embodiment of the system includes the camera 14 with a user
4 selection on pad 50 whereby the user can choose to receive or not receive messages. A
5 further alternative includes selection by a user to receive only one or more types of
6 messages, such as only personal messages, or only personal and interest group based
7 messages, etc. A further alternate embodiment of the system includes the message center
8 12 continuously transmitting generic messages as mentioned above for all cameras,
9 and/or continuously transmitting interest group messages and/or personal messages along
10 with the particular codes required for reception of the messages by a particular camera.

11 The camera 14 receives the messages, stores them in RAM (Fig. 7), and puts
12 them on the display 48, or other messaging mechanism such as an audio speaker 45 as
13 provided in an order according to a priority assigned by the message center. Interactive
14 messages remain on the display 48 until the user responds, preferably through activation
15 of a key or key sequence on the camera keypad 50. Alternatively the keypad 50 can be
16 implemented as virtual keys by implementing the LCD screen 48 as a touch screen. As
17 part of the preferred embodiment, or as an alternative feature, a key or key sequence is
18 provided allowing a user the option of avoiding the reception of messages by activating
19 the key or key sequence on the keypad 50. In response to the key sequence, the camera
20 processor preferably refrains from initiating the transmission of a signal notifying the
21 message center that the camera is activated. Other methods of deactivating the message
22 system will be apparent to those skilled in the art, and these are included in the spirit of
23 the present invention. For example, a switch or key sequence can be provided that

1 deactivates the transceiver by cutting off its power source, etc. This latter approach is
2 preferably provided in the camera, according to the system requirements when the
3 alternate embodiment is implemented wherein the center continuously transmits
4 messages.

5 Fig. 3A illustrates the process of preparing a message packet for a particular
6 camera. When the message center receives a notification 53 that a specific camera is
7 being turned on, or alternatively ready to receive new messages, the center issues
8 commands 55 to the databases to prepare a packet. Fig. 3A shows three databases,
9 including a user's database 58 containing user specific information such as the user's
10 name, address, ID 59, camera model, and the user's special interests. In addition, the
11 user database 58 can include personal messages that are directed to a particular user, such
12 as a notice of expiration of a warranty, service contract, etc. An interest group message
13 in database group 56 could be for a specific camera model group messages such as a
14 recall notice, tips on how to use a camera upgrade for the particular model, or special
15 operating instructions. The generic message database could include new product
16 advertisements and other generic messages. Messages in the generic database (60) can be
17 advertisements that are only remotely related to the cameras themselves. For example,
18 such advertisements can promote a specific brand of batteries, a special offer on printing
19 services etc.

20 In operation, sending database 58 the user ID would cause the particular users
21 interest group data to be sent to the interest group database 56. The database 56 responds
22 by outputting 63 the corresponding stored messages. The user's database 58 outputs the
23 personal messages, either directly 65, or to an encryption routine 61, which then outputs

67 encrypted personal messages. The generic messages, interest group messages and personal messages are then each assigned a priority and display time 54, packaged 52, and sent and displayed 80 on the user's camera.

Fig. 3B describes an alternative advertisement system in which the advertisement system sends generic messages (block 94) as well as messages associated with special interest groups (block 92) on a continuous or periodic basis, either random or scheduled, without the center having received a signal from a camera that it has been turned on. Messages for specific individual users are only sent by request (block 90), i.e. when the center receives a signal indicating that a camera has been turned on. In the system illustrated in Fig. 3, the camera preferably has the role of deciding whether to accept a message or not, as well as the role of prioritizing the camera display (block 96).

Fig. 3C illustrates an example of a possible single message structure. Each message has an identification number. In addition, the message type is indicated for determining the distribution of the message, whether it is a personal message, an interest group message, or a generic message. Other parameters include message priority, and the body or i.e. content of the message. The message body can be in a known file format, such as display language HTML, or alternatively in a proprietary graphic or textual format.

Fig. 3D illustrates a packet generated from multiple messages such as described in Fig. 3C.

Fig. 4 illustrates a generic type of message for an advertisement. The messages can be displayed on a portion of the screen as a banner, or they can occupy the entire screen. In the case of an interactive message, the user may be asked to reply. As an

1 alternative, messages that will not be replied to may have a default reply that is activated
2 after a predefined length of idle time. Naturally, such advertisements can be not only
3 alphanumeric, but graphical depending on the display category.

4 Fig. 5 illustrates a personal message notifying a camera user that prints are ready
5 for pickup. As before, the user may be prompted for a reply.

6 Referring now to Fig. 6A, the method of the preferred embodiment is illustrated
7 in more detail in a flow chart. The method of Fig. 6A assumes and includes the process
8 of Fig. 3A or a similar procedure where the message center has prepared messages
9 waiting for transmission to a camera. The next step, as shown in Fig. 6A is a user
10 starting/turning on a camera (block 62). The camera 14 (Fig. 2) optionally includes a key
11 64 (Fig. 2) or a key sequence by which the user may select to receive or not receive the
12 messages as explained above. This option is indicated by block 66 in Fig. 6A. If the user
13 selects to not receive messages 68, a preferred embodiment has the camera not
14 transmitting a message request signal (block 70). Alternatively, or in addition a key
15 sequence is provided whereby a user can select to not receive any messages transmitted
16 from the message center. This latter approach is preferred if the message center is
17 continuously transmitting. If the user selects to receive messages 72, the camera
18 transmits a message request signal to the message center 12 (block 74). The message
19 request signal includes information identifying the camera. It also may include a camera
20 access code that must be transmitted by the message center in order for the particular
21 camera to receive the message. Optionally, the message center may already have the
22 access code for each camera serial number, and in that case the camera only needs to
23 transmit enough information to identify itself.

1 Upon receipt of the request signal from the camera, the message center 12 collects
2 any personal messages and any messages for the particular model camera (block 76). The
3 center 12 then adds selected generic messages and puts them in an order, assigning the
4 necessary order/priority (block 78). These messages are then “packaged” and
5 sent/transmitted to the camera (block 80). The camera receives a block of messages and
6 stores them in memory. Each message is then separately placed on the LCD display 48
7 (block 82) according to the priority assigned by the message center. Each message
8 remains on the display for a prescribed time according to the priority data. Alternatively,
9 each message can remain on the display until the user activates a key, for example on the
10 keypad 50. As a further option, the camera includes a key allowing a user to move
11 forward or backward (toggle) in the message list to find a particular message. (block 83).
12 The user can also select to delete a particular message from memory. The preferred
13 method of display is sequential, with each message displayed in the order assigned
14 according to a priority sent by the message center. The user can select (toggle) to have
15 each message displayed until a key is activated to display the next message. A second
16 key can be used to move backwards in the list of messages to view a message previously
17 displayed. Alternatively, the user can select to have the camera automatically display the
18 messages, one at a time in the order assigned, with each message displayed for a set time
19 interval and then automatically displaying the next message, etc. These options are
20 indicated by block 83. In the case of any interactive messages such as the one illustrated
21 in Fig. 4, the user must respond by pressing the required key on the keypad 50, which is
22 Y or N in Fig. 4 (block 84). The camera then transmits the answer/selection (block 86).

Fig. 6B illustrates an alternate embodiment, as described above based on the packets as described in Fig. 3B, wherein the center continuously transmits messages. The message center collects generic messages, model based messages, and personal messages and assigns the camera access codes to the model and personal based messages for the corresponding cameras (block 61). The center then transmits the messages and required codes continuously (block 63). In order for the camera to receive a message, the user first turns the camera on (block 65), and then selects (block 67) to either receive 69 or not receive 71 messages. Upon receiving and displaying a message (block 73), the user will need to respond if the message is interactive (block 75). The response is then transmitted by the camera to the message center (block 77).

Fig. 7 is a detailed block diagram of the digital camera 14, including a modification of the integrated communications device and digital camera shown in Fig. 9 of U.S. Patent Serial Number 09/105,594, the disclosure of which is included in the present specification by reference. For a detailed disclosure of various alternative network connections, reference is made to the relevant figures of Serial Number 09/105,594. Referring now to Fig. 7, the camera 14 includes a camera digital image acquisition apparatus 88 in communication with a processor 90 through bus 90. The processor 90 includes a clock 94, a counter 96, storage for additional data 98, image processing capability 100 and a security engine 102. The connector 24 provides interface with the processor 90 through network connection controller 104 by way of bus lines 106, 108, 110 and 112. Alternatively, or in addition, the camera has a built-in modem 114 interfacing with the controller 104 via bus 116, and to a communications network through connector 32 via bus 118. The smart card 36 of Fig 1 interfaces through the card

1 slot 38 with the processor 90 by way of card controller 120 via buses 122, 124, 110 and
2 112. The transceiver 125 is shown for RF communication, interconnected with the
3 network controller 104 via bus 126, and including the antenna 16 connected via bus 128.
4 The keypad 50 is interfaced with the processor 90 by a keypad controller 130 via buses
5 132, 134, 110 and 112.

6 Numerous user interface items are shown in Fig. 7, included generally in the user
7 interface area 136 of Fig 1 or at other locations as desired, including a battery indicator
8 138 and LCD display 140, a power switch 142, light alarm 144, and sound alarm 146.
9 These are all interfaced with the various relevant component blocks of Fig. 7 by a user
10 interface controller 148. The LCD display 140 (Fig. 2) for purposes of the present
11 disclosure includes facility for any of various items that may be useful to communicate
12 camera related matters to the user. These include a count of the number of images taken,
13 and indication of low battery power. The light 144 and sound alarm 146 are used with or
14 without accompanying messages indicated by the LCD display 140. For example, the
15 alarm may indicate low battery power. LCD display 48, located preferably on the camera
16 back, as shown in Fig. 2, also receives data from the processor through controller 148. It
17 displays messages from the message center, but can alternatively be used to display the
18 camera related items described as displayed on display 140. Also indicated in Fig. 7 are
19 the necessary memory units, including a ROM 149 and RAM 150 and a power supply
20 152 with options, including a battery 154, an AC battery charging supply input 156, a
21 phone line power connection 158 and a line 160 from an alternate power bus, not shown.

22 In operation, activation of power switch 142 turns the camera on, causing the
23 processor 90 to send the camera identification to the message center 12 by activating the

1 transceiver 125 for sending a corresponding camera ID code. The processor may also
2 send an access code that must be indicated in data sent to the camera in order for the data
3 to be received. This code does not have to be sent if the center 12 already has the code
4 for each camera.

5 Although the present invention has been described above in terms of a specific
6 embodiment, it is anticipated that alterations and modifications thereof will no doubt
7 become apparent to those skilled in the art. It is therefore intended that the following
8 claims be interpreted as covering all such alterations and modifications as fall within the
9 true spirit and scope of the invention.

10 It is claimed that: